

REMARKS/ARGUMENTS

Initially, the Examiner is thanked for withdrawing the rejection of claims 1 and 32-39 as being unpatentable over Demissie et al. in view of Yokota.

Claims 1, 32, 34-39, 41-43, 45-46 and 48-51 now stand rejected based on Kobayashi et al. (U.S. Patent Application Publication No. 2002/0006537, hereinafter "Kobayashi") in view of Yokota (U.S. Patent Application Publication No. 2002/0085967). While the rejection appears to be characterized as a rejection under 35 U.S.C. § 102(b) (see section 4 of the Office Action), for the sake of this response, Applicant has assumed that the rejection is more properly characterized under 35 U.S.C. § 103(a) and is, in fact, an obvious-type rejection.

According to the rejection, the Examiner appears to take the position that Kobayashi teaches a power generation apparatus including a fuel cell 1 and an anode 1D. The Examiner further relies on the disclosure in paragraph 52 which recites a three-way valve 34 shown in Figure 1 which directs hydrogen from the fuel cell either back to pump 33 or out of the system as shown by an arrow. Further, the Examiner does not give any patentable weight in the claimed tapping off of hydrogen for use in a separate process, but instead holds the existence of this limitation as not part of the claimed invention based on intended use. This position is contrary to prior agreements reached during a prior interview with the Examiner in connection with ignoring this language. The Examiner does recognize that Kobayashi does not teach a reforming module that is configured to separate hydrogen from other components. Regardless, to address this deficiency, the Examiner relies on Yokota to teach a process and apparatus for generating hydrogen which may be used for a fuel cell and cites paragraphs 2, 7 and 59 for support.

In addition, claims 33, 44 and 47 have also been rejected based on Kobayashi and Yokota in further view of Keefer et al. (U.S. Patent Application Publication No. 2002/0142208, hereinafter "Keefer"). According to the Examiner, the base combination does not teach an arrangement to remove water from the outflow stream of the anode and the fuel cell and Keefer addresses this deficiency. These rejections are respectfully traversed.

Claim 1 has been amended to indicate that the controlling arrangement is configured to vary the amount of hydrogen tapped off from zero to all and between zero and all. Support for this amendment can be found on page 9 of the specification, lines 13-20. Claim 48 has been amended to indicate that the controlling arrangement controls a proportion of hydrogen recycled to tapped off wherein the proportion of hydrogen recycled to tapped off can be controlled through the controlling arrangement to include 100:0, 0:100 and at least one ratio there between. Support for this amendment can be found on page 9, lines 20-23. New claims 52-54 also recite various proportions of hydrogen recycled to hydrogen tapped off and, once again, support can be found on page 9, lines 20-23. Claim 43 has been amended to more particularly recite how the valve is a three-way valve which receives an inlet flow from the outlet of the fuel cell and is connected to first and second pipes, with the first pipe defining the recycle path extending between the outlet of the fuel cell and the inlet of the fuel cell, and the second pipe directing the hydrogen, which is tapped off and not recycled, to a separate processing unit. Once again, support for this amendment can be found on page 20, lines 16-20. Similar limitations can be found in new claim 55. Since all the amendments have support within the specification as originally filed, no new matter has been added.

Kobayashi discloses a system including a fuel cell 1, as shown in Figure 1, which recycles hydrogen from an anode exhaust back to the anode inlet, first via a three-way valve 34 and then a hydrogen circulating pump 33. The three-way valve can either be switched to discharge the exhaust hydrogen out of the system, or it can be set up to recycle the hydrogen back to the anode inlet via the circulating pump (see paragraph 52 of Kobayashi). The Examiner has equated this process to recycling and tapping off

hydrogen, with the amount of hydrogen being controllable. However, in Kobayashi, there is no disclosure of any control over the amount or proportion of hydrogen recycled, as recited in amended claims 1 and 48 respectively, particularly as the valve is either open or closed. Thus, Kobayashi does not disclose providing a controlling arrangement configured to vary the proportion or amount as claimed.

In contrast, the present invention provides a system in which the amount or proportion of hydrogen is recycled, i.e., a variable parameter, can be controlled using the controlling arrangement, i.e., varied over a range. This allows the system to cope with varying demands, for example, from different electrical load requirements and/or external hydrogen requirements, which would not be possible using the fuel system disclosed in Kobayashi because it is unable to control the proportion of hydrogen recycled.

In regard to the dependent claims, they should be considered allowable at least by virtue of their dependence on the independent claims. Furthermore, the dependent claims are seen to recite further patentable subject matter. For example, claims 43 and 55 recite the particulars of how pipes direct hydrogen which has passed through the three-way valve. The structure of these pipes which is not seen in the applied prior art.

Based on the above remarks and amendments to the claims, it is respectfully submitted that the present invention is patentably defined over the prior art such that allowance of all claims and passage of the application to issue are respectfully requested. If the Examiner should have any additional questions or concerns regarding this matter, the Examiner is cordially invited to contact the undersigned at the number provided below in order to further prosecution.

Respectfully submitted,



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